

CAROLINE



THE MOTOR YACHT CAROLINE



Modernity in the art of yacht design, and very substantial distinction, is reflected in the graceful lines of the motor yacht *Caroline* as she lays at anchor in the Delaware River, her white sides and tall spars standing out in silhouette against the drab city skyline across the water.

Three thousand tons of ship and machinery at rest in constant readiness to transport the owner to any part of the world—on a short Caribbean cruise, a modest voyage over the blue waters of the Mediterranean or, if it is so desired, to trace the trackless course of Polynesian transmigration from the Coast of India across the Indian and Pacific Oceans almost to the base of the Andes.

Such voyages require a ship in the truest meaning of the word and the *Caroline* fulfills that requirement—but more than that, she provides all of the comforts and amenities of life in a fine home ashore while affording an opportunity for unrestricted travel in safety and comfort at sea, the allurements of which are more fully appreciated by those who would probe latent treasures of knowledge hidden away in the incompletely explored parts of the earth.

Long voyages to the far corners of the world in a vessel designed and built primarily for use in recreational pastime are made infinitely more pleasant to the participants through the employment of the newest developments of scientific and engineering character. These have been applied to the *Caroline* in every essential respect, enabling her to navigate the stormiest seas in perfect safety and absolute comfort.

One of the most noteworthy achievements in this respect is employment of the gyroscope, in one instance to prevent rolling in bad weather,

and in the other to eliminate the uncertainty of navigation by the older method employed before the advent of the gyro compass and radio as navigational aids.

Another adaptation of modern engineering is the use of Diesel motors, thereby eliminating the objectionable features of steam boilers aboard and extending the cruising radius far beyond the normal range otherwise attainable.

In the interest of creature comfort aboard, refrigeration is applied to the maintenance of comfortable temperature in the living quarters and, of course, the more prosaic duty of preserving the food supplies, in sufficient quantity for some six months, in a fresh and wholesome condition.

The radio serves double duty, that of maintaining telegraphic contact with the rest of the world and bringing to the yacht current events and entertainment which is always on the air. But in the matter of providing amusement, the radio has limitations of range which is not true of the older and somewhat more fully developed victrola, also constituting a substantial part of the ship's fund of entertainment.

The more generally understood and commonly employed modern aids to comfort, such as electricity in its almost unlimited applications; steam heat, modern sanitation and complete ventilation, are applied to all quarters both for owner and crew, in complete detail.

HULL CONSTRUCTION

In size, *Caroline* ranks high amongst the ocean-going yachts—only one larger pleasure craft has been built in American shipyards since 1926. In her design and construction, advantage has been taken of every modern development, of tried and proven character, which contributes to the utmost safety and comfort at sea. In appearance she appeals forcefully to the aesthetic tastes of those who dislike innovations of a bizarre character.

Caroline's lines are the result of development extending over a period of years, dating back to the days of the American clipper ship, of

which her overhanging bow is particularly reminiscent, with its handsomely curved stem, attractive figurehead and substantial bowsprit. The main run of hull, from the bow aft, follows the lines of early English steam yacht design, but the midship section is fuller and the freeboard much greater, thereby producing a more stable, seaworthy vessel and providing infinitely more room for living quarters.


Steel is employed throughout the main structure. Hardwood is used where it serves better than steel and produces a more attractive finish as, for example, in the decks and rails.

Steel construction permits the embodiment of safety features such as watertight bulkheads and double bottoms. These are arranged in the *Caroline* so that in the event of an accident at sea, followed by the flooding of a major compartment such as the engine room, the vessel will remain afloat in stable condition. It also makes possible the construction of tanks, as part of the structure, for the carriage of fuel and fresh water in large quantities in parts of the hull which could not be usefully employed otherwise. This accounts to a large extent for the yacht's ability to negotiate extremely long voyages without the need of replenishing the fuel and water supply. Tanks thus provided will carry 365 tons of fuel oil, 1163 gallons of lubricating oil and 347 tons of fresh water, giving a cruising range on one filling of 10,000 nautical miles at a cruising speed of 12 knots, which is 3 knots less than the maximum speed.

M E C H A N I C A L E Q U I P M E N T

In mechanical equipment the *Caroline* is unique. She has two eight-cylinder Cooper-Bessemer Diesel engines, each capable of developing 1500 horse-power. Turning at 300 revolutions per minute, which is the speed at full power rating, these engines drive *Caroline* at a speed of 15 nautical miles ($17\frac{1}{4}$ land miles) per hour.

The Diesel engine is a machine of internal combustion type, similar in some respects to the gasoline motor. Fuel oil is burned in place of



gasoline. This is made possible by employing very high compression, the temperature of which is sufficient to bring about spontaneous combustion when a small charge of fuel is sprayed into the combustion space, thereby eliminating electric ignition. The cylinder bore is 18 inches and the stroke is 22 inches in the *Caroline's* engines.

Auxiliary power on the yacht is furnished by three Diesel-driven electric generators. Two of these are capable of generating 150 kilowatts each and the third one is rated 50 kilowatts, making a total capacity of 350 kilowatts. While this is considerably more power than is required for lighting and the operation of auxiliary machinery, additional power is necessary aboard the *Caroline* for operation of the Sperry gyroscopic stabilizer, which is described on the following pages.


Electricity operates all of the mechanical equipment aboard the yacht. This includes the refrigerating machines for the preservation of six months' supply of perishable food, the ventilating system, which also heats the ship in cool weather and cools the living quarters in hot climates, the sanitary and fresh water systems, which circulate fresh and salt water both hot and cold throughout the vessel, a completely equipped steam laundry, an electric passenger elevator, steering gear, pumps, anchor windlass boat hoists and many small mechanical labor-saving devices.

THE GYRO-STABILIZER

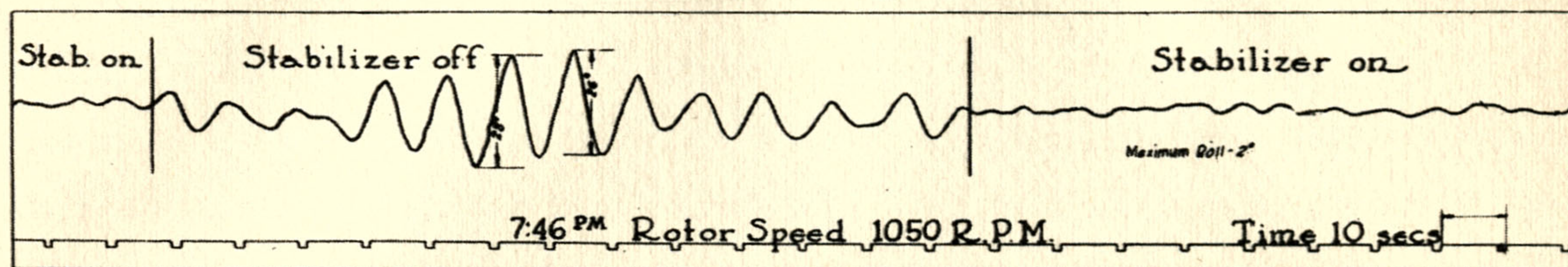
Rolling, as every one who has gone to sea knows, is one of the greatest discomforts of ocean travel. Efforts to overcome it are as old and varied as ships themselves. Now, along with the other great engineering advances of our day, a means has been perfected for preventing roll and is in use on many vessels, amongst them the *Caroline*. This device is called the gyro-stabilizer.

Perhaps the simplest and most readily understandable explanation of the method by which the gyro-stabilizer maintains a vessel on even keel is to compare it with a spinning top, the potential capacity of which

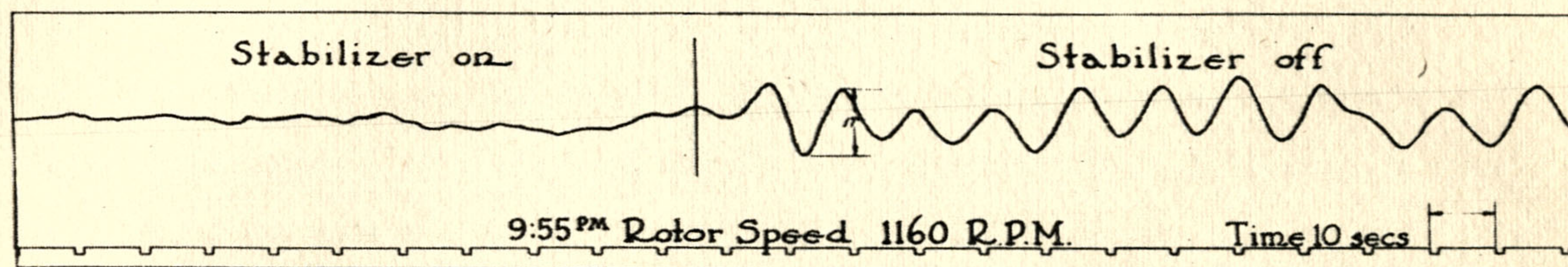
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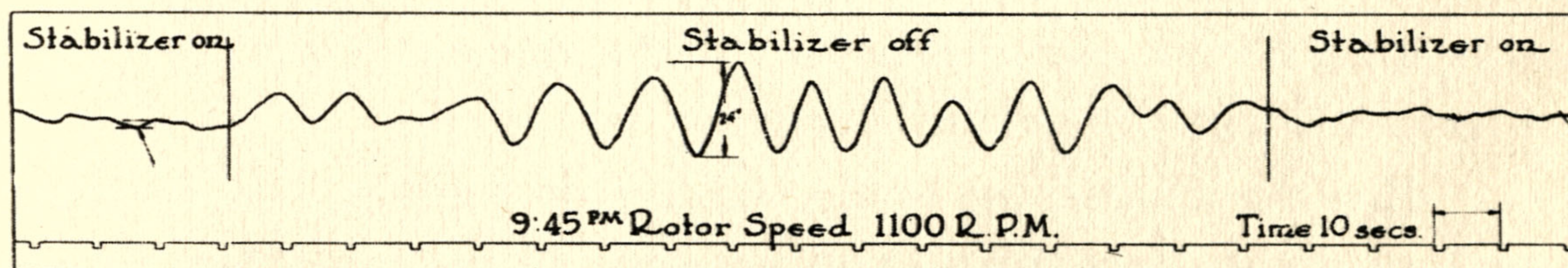
Yacht Caroline
Rolling & Stabilizing Records
Glen Cove, N.Y., to Philadelphia, Pa.
Sept 28, 1931



Quartering Sea



Following Sea




Following Sea

STABILIZATION

On a trip from Glen Cove, Long Island, to Philadelphia, the *Caroline* was equipped with a roll recorder to take a performance record of the gyroscopic stabilizer. A graph was made, which is reproduced on this page, showing how much the vessel rolled when free of the stabilizer and how little was the extent of rolling with the stabilizer in operation.

With the rotor of the stabilizer rotating at 1050 revolutions per minute, a maximum roll of 28 degrees in a quartering sea was promptly reduced to two degrees and maintained within that limit. In a following sea the maximum roll was 24 degrees and this also was reduced to two degrees when the stabilizer was engaged. The graph very closely depicts results of the tests.

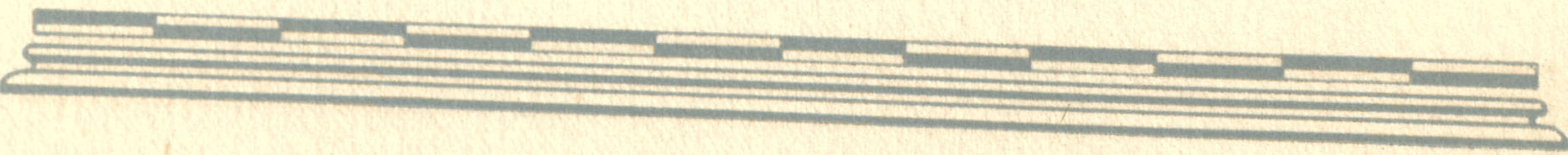


has been recognized for many years but only very recently developed and applied by the Sperry Gyroscope Company. A simple wheel of the proper size mounted on a shaft and caused to spin may be made to resist strongly any force tending to roll the vessel upon which it is mounted.

The gyroscope in the *Caroline* weighs 105,790 pounds. Its complete wheel is eight feet in diameter, weighs 45,000 pounds and spins at a rate of 1300 revolutions per minute. The shaft upon which the rotating wheel is mounted is carried in bearings which are held in a heavy steel frame that is in turn attached to the hull structure of the yacht.

The gyroscope accomplishes its stabilizing effects by employing rather complex electrical and mechanical devices which detect the slightest rolling movement and immediately bring into action forces that resist the action of the waves. Technically described, the gyroscopic-stabilizer on the *Caroline* has a roll-quenching power of 5.7 degrees—in non-technical terms this means that there is sufficient stabilizing power to hold the decks of a 2000-ton vessel such as the *Caroline* within two or three degrees of horizontal under all weather conditions.

How the stabilizer can hold a ship upright deserves some comment as it is not quite the prodigious task it seems. Waves do not beat against a ship as they do against a solid breakwater because the ship is free to rise and fall and the bulk of the wave passes under her, imparting a comparatively small amount of roll. One wave merely starts the rolling and it requires an entire succession of waves to build up violent rolling motion. Therefore, only a comparatively small artificial force equal and opposite to the disturbing action of each wave, and lasting until the energy of the wave is spent, need be applied to prevent rolling. The gyroscopic-stabilizer simply catches the roll at the start and never permits it to build up to bad proportions. Forces to this end originate in the spinning rotor, are passed through the shaft and bearings to the rotor casing, through another set of bearings to the foundation and finally to six of the main steel frames of the hull structure.



OFFICERS AND CREW

The *Caroline* is operated by a regular crew of 42 men not including servants, who are aboard only during cruises. Navigation of the yacht and management of the crew conforms exactly to deep sea practice in commercial vessels, but there are other special duties peculiar to yachting. A full complement of licensed officers and engineers is carried on deck and in the engine room. The deck force comprises a captain, chief, second and third officers, a radio operator, four quartermasters, five seamen, a boatswain, a carpenter and three launch men. The engine room crew comprises a chief engineer, first, second and third assistant engineers, one electrician, three oilers and two wipers. In the steward's department there is a chief and one second steward, a chef, second and third cooks, three mess men, two bedroom stewards, pantry man, a laundry man and a utility man.

At sea a constant watch is maintained on deck by one of the licensed officers with three men stationed as follows; a quartermaster in the pilot house, a lookout forward and a watchman making his rounds of the ship. In the engine room a licensed engineer is in charge of the watch, assisted by an oiler. The master and the chief engineer have no regular watches but are in constant readiness for call by their respective lieutenants in the event of any unusual condition requiring their immediate attention. The routine as just outlined conforms to that of a modern passenger liner.

The steward's department functions in a manner somewhat similar to the practice maintained on passenger ships. This department's work is carried out largely during daylight hours. It includes the preparation and serving of meals and the maintenance in a cleanly and orderly condition of all living quarters on the yacht for owner, guests and crew. This department is charged with responsibility for the maintenance of all furnishings on deck for the convenience and comfort of the owner and guests.

ACCOMMODATION FOR OWNER AND GUESTS

To survey the *Caroline* as a single entity seems so impossible that she must be treated as a shipbuilder's masterpiece, a designer's product of advanced thought, an engineer's achievement in giving life to wood and metal, and a decorator's consummation of beauty, comfort and attraction.

Private accommodation for the owner and guests is confined to the after end of the yacht below the main deck. Extending across the beam of the vessel, the owner's stateroom has the effect of a double apartment with panelled walls in shades of soft green with furniture of an eighteenth century English style. One room for the maid and another for the valet adjoin this apartment.

Guest rooms are arranged in pairs and separated by seven-foot sliding doors which automatically lock open or closed so that two rooms may be divided or connected as one large suite. There are six guest rooms each with a connecting bath. All of these rooms are nicely furnished and decorated to provide the utmost comfort and the most restful atmosphere for their occupants.

Spaciousness has been achieved in the arrangement of cabins on deck. The living room, occupying the after end of the main deck house, is 25 feet wide and 37 feet long. Double doors lead from this room to the after deck, which is sheltered and provides a comfortable lounging space. The dining room, also on the main deck, is 29 feet in length and 26 feet wide. The entire main deck house is given over to these two large rooms and several smaller compartments, which include the galley, maids' dining room, an embarkation hall and the smoking room at the top of the gangway, the laundry, engine room trunk and the chief engineer's quarters.

Up on the boat deck, there is an observation room at the extreme forward end providing a clear view ahead about equal to that from the pilot house, which is directly above this room. In the after end of this deck house is the captain's apartment and the master gyro compass room.

A radio station and accommodation for two operators is located on the boat deck abaft the stack. An adjoining cabin is intended for use as a laboratory when the yacht is engaged in scientific expeditions and exploration work. This laboratory is connected with doors to a sheltered deck space just forward of the mainmast. It faces the long top of the after boat deck, which is clear of all obstructions in order that it may be used for deck sports and, on appropriate occasions, an airplane could be carried here. Provision for lifting the plane can be made by rigging a boom to the mast, which is of sufficient size and strength to be used for this purpose.

FURNISHINGS AND DECORATIONS

The decorations follow the styles of XVIII Century England and are executed in such a manner that in passing from one room to another one feels that, while there is a change in the soft color harmonies, and while a certain room may lean more to the earlier periods than another, there is about the whole a well studied feeling of unity and restfulness.

The furniture in the living room is predominantly Queen Anne and William and Mary, with a few Chippendale pieces. Coverings used are brocades, English tapestries and silk velvets in henna and apricot shades and numerous touches of soft green. A specially made Aubusson rug in two shades of henna covers the entire floor, the rich border employing all of the dominating colors of the room. This is a hand woven rug which derives its name from the town of Aubusson, France, where most of these rugs have been woven for centuries. There is another similar rug in the dining room. These two rugs presented an unusually difficult problem in designing as the patterns had to conform to the shape of the floors which, on a vessel, must follow the lines of the ship. They are woven in the same manner as are true hand woven wall panels, of which there are two fine examples on the dining room walls. For these specially woven tapestries, full sized hand paintings must be made, from which the weaver works. All the materials used are vegetable dyed for beauty and

permanency. These tapestry rugs and panels were designed by Lorentz Kleiser and woven under his direction by the Edgewater Tapestry Looms.

Lighting fixtures in the dining room are of pewter set off by a background of knotty pine panelling. At one end of the living room is a fine mantel with marble facing and hearth. The andirons, fittings and fender are of bronze. In the panel above the mantel hangs an oil painting by Gordon Grant, showing a full rigged clipper ship in full sail.

The smoking room is colorful and gay. The walls are of teak. Furniture is mahogany in Chippendale and Sheraton styles, covered in leather, goat's hair, damask, suede and hand blocked linen. The various colors used in the room are taken from the linen draperies. There is a very dark blue twisted yarn chenille floor covering.

Panelled in oak, the dining room has an exceptionally spacious appearance. Fore and aft hang a pair of beautifully executed tapestries. Finely carved Georgian and Chippendale furniture in mahogany is used. The Aubusson rug has two tones of green in the field and greens, golds and burgundy shades in the border. On the commodes and serving tables are pieces of rare lace. The dining table boasts of the finest of linens which are individualized by the exquisitely embroidered name, Caroline, on all of the pieces.

The walls of the owner's staterooms are panelled and painted a soft green. Furniture is satinwood in XVIII Century style. The color scheme of the rooms is jade, apricot and gold. Bedspreads are of butter colored taffeta quilted in a small all over pattern and edged with taffeta, matching the flame colored hangings. These combinations are further enhanced by the background of jade chenille which covers the floor.

In addition to the owner's staterooms there are also two guest staterooms forward of the divisional bulkhead. These rooms are painted a soft blue with mouldings picked out in silver. The furniture is also painted blue with lines of coral. Fabrics used are brocades in blue and coral colors. Bedspreads are of taffeta in the same shades.

There are two single and two double staterooms aft. One of the

double staterooms has walls painted in old rose and ivory. The furniture is painted in contrasting colors of rose. Wine colored chintz is used on a small easy chair and for the hangings. The bedspreads are of turquoise small pattern silk. This room opens into another in which many shades of green are used for the panelled walls and furniture. One of the single staterooms has yellow walls with a refreshing yellow flowered chintz edged in green for the hangings and bedspread. The adjoining room has ivory walls and furniture and fabrics of lacquer red and indigo blue. The comforters and blankets in these various suites conform to the color schemes of the rooms. The linens are beautifully embroidered. The bathrooms in general effect follow the color combinations of the staterooms.

The laboratory on the boat deck has walls of teak and furniture of mahogany in a simple Sheraton style. Cushions of gay figured linen brighten the otherwise sombre effect. On the same deck, the observation room has teakwood furniture covered in blue leather. Hangings of a conventional pattern linen in many shades of blue, green and bright yellow lend a touch of color.

Furniture on the quarter deck is teakwood with loose cushions of bright red leather. On the floor in the aft deck shelter is a very fine old Fereghan and other smaller Oriental rugs are used in front of the various grouping of tables, chairs and settees. Three rectangular tables are used in the arrangement and they are so constructed that they may be securely joined together for dining. The luxurious stern seat, also covered with red leather, is literally dotted with dozens of pillows made of waterproof fabrics in bright yellows, blues and greens.

The captain's stateroom, in keeping with all the rest of the unusually fine appointments of the yacht, is furnished with Chippendale pieces covered with green leather. Hangings are of a twotone green and gold stripe and the lighting fixtures are of bronze with sheep skin candle shades.



SILVER AND CHINA

Silver service on the *Caroline* is of massive character and weight, of an octagonal Queen Anne design, especially planned in shape and proportion so that the pieces have broad bases, thereby insuring the stability necessary for use upon a ship. The hollow-ware consists of pieces for table decoration such as center-pieces, candlesticks, compotiers, vases, the various serving pieces such as meat and vegetable dishes, gravy boats, pitchers and tea, coffee and cocktail services. The flatware is of simple outline and has a suggestion of the same panelling as on the dinnerware. Each piece of silver is engraved with the name, *Caroline*. It is all fitted into drawers and compartments in the commodes of the dining room.

China services are of a variety of designs. The breakfast and luncheon services by Dalton are of the Chinese tree pattern, an XVIII Century English design.

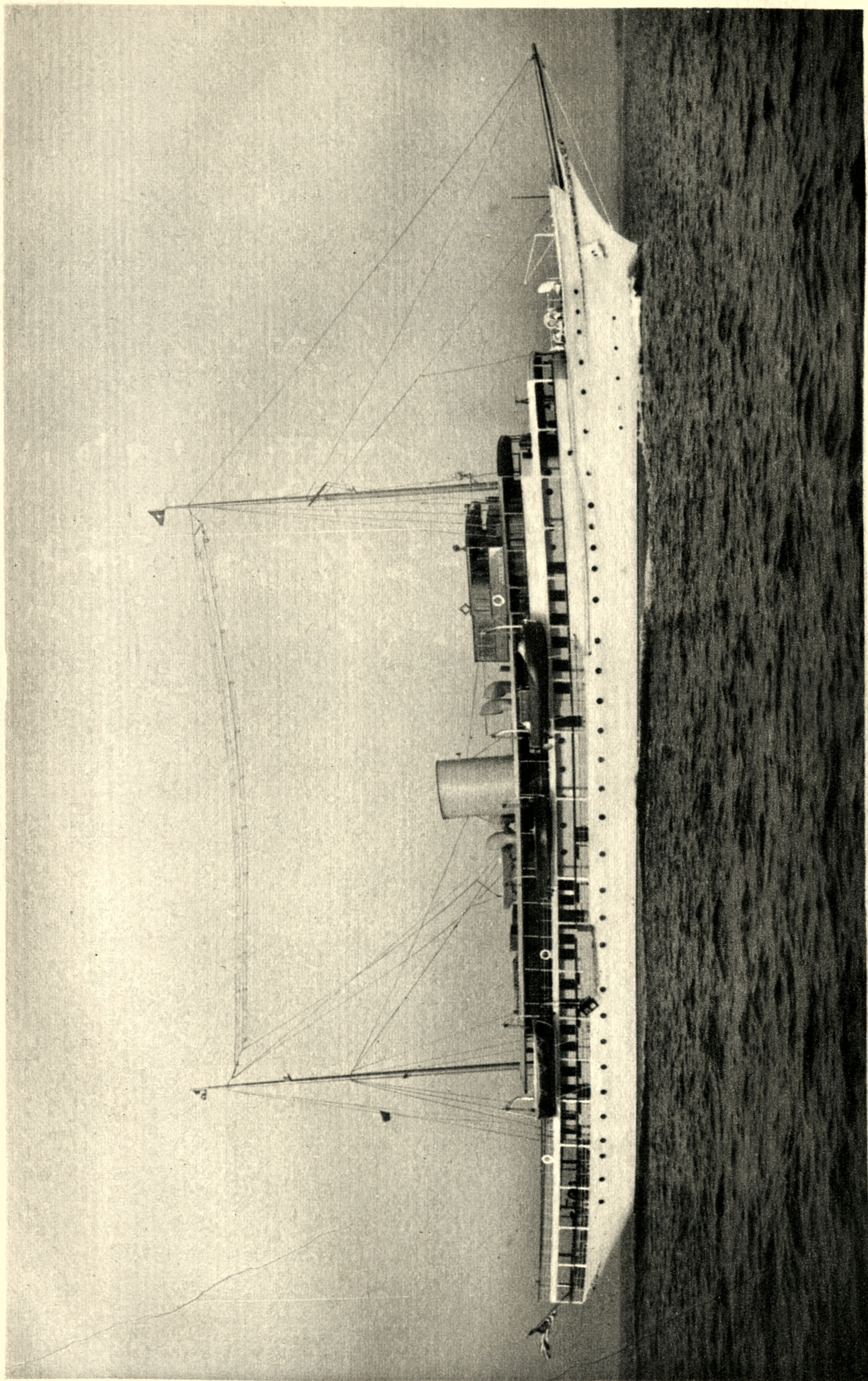
The dinner service by Lenox is more formal. It is of ivory color with a narrow gold edge. In addition there are Minton service plates with classic heads in pate-sur-pate, with gray panels and painted flower centers. The fish and game plates are by Dalton, each plate painted by Birbeck with a different species of fish or fowl.

There are two dessert services. One is a square shape of Dalton design in ivory and gold with painted flower centers; the other a Minton pattern in blue, white and gold, with pate-sur-pate allegorical figures. The after-dinner-coffee cups and saucers are by Worcester, and are of three different colorings: green and gold, ivory and gold, and yellow and gold.

There are also a number of individual breakfast sets of various patterns. The glassware is of an XVIII Century cut-fluted design, which harmonizes with the panelled decoration of the silverware.

The silver, china and glassware were supplied by Tiffany.

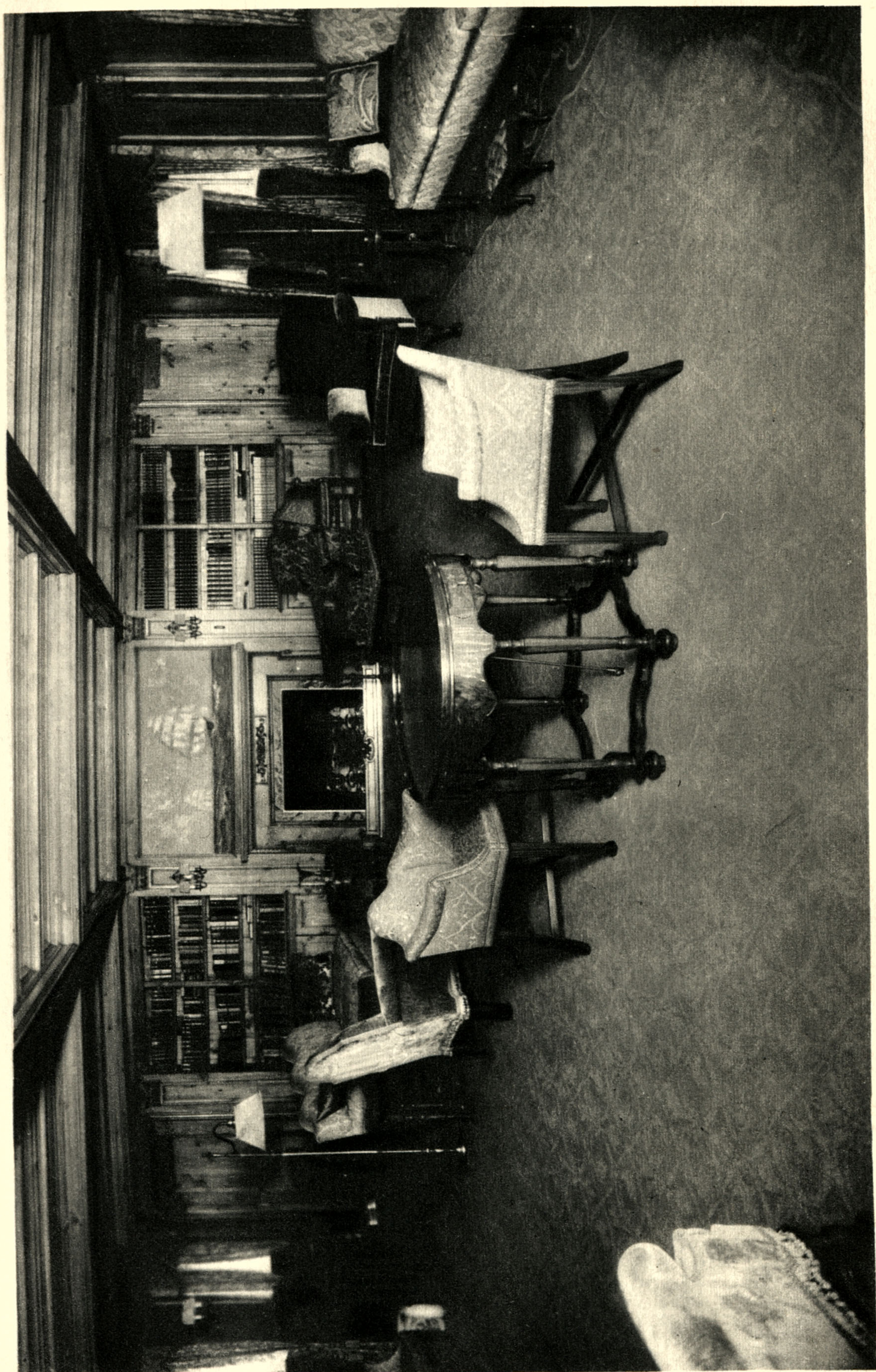




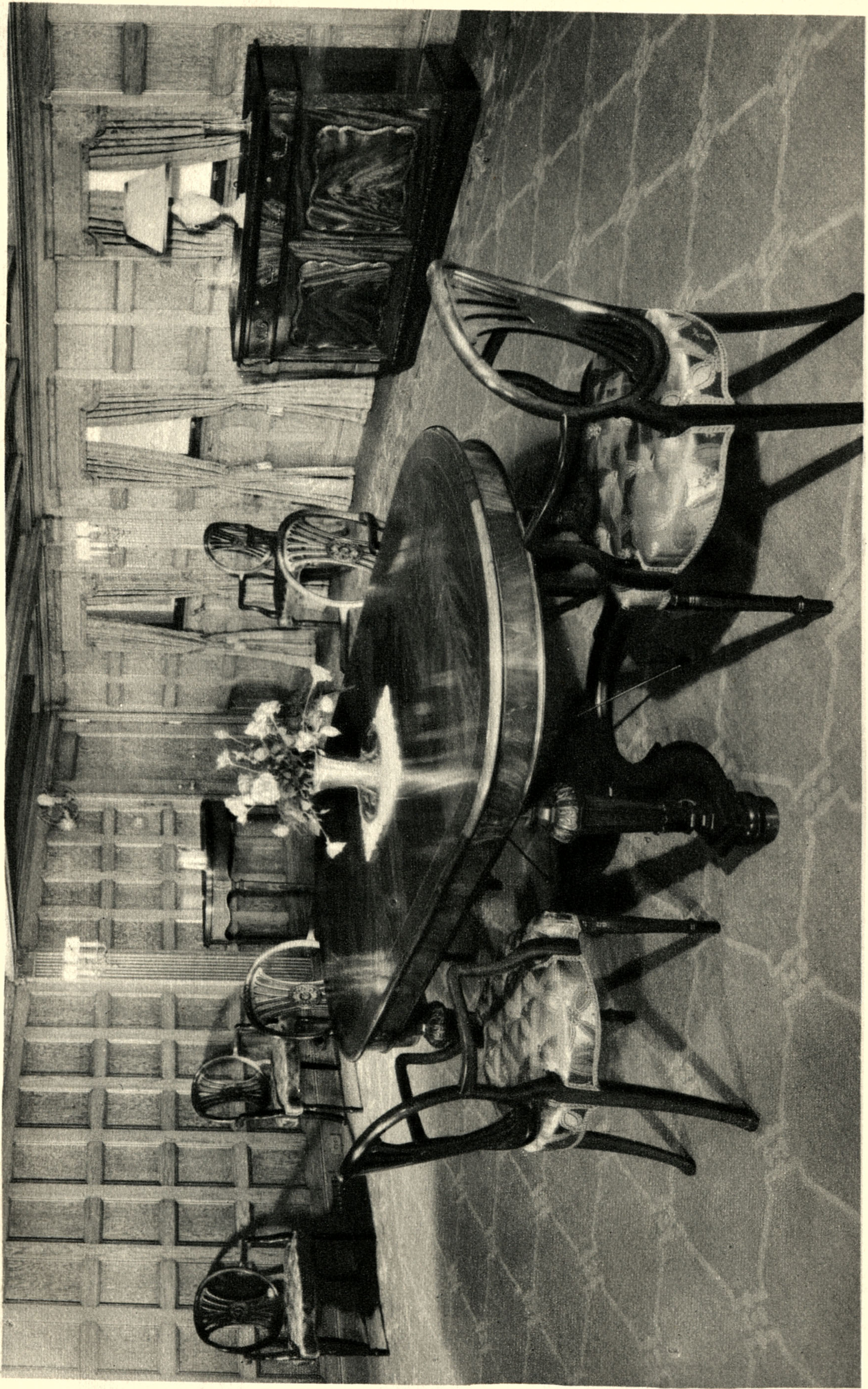
CAROLINE AT CRUISING SPEED



LOUNGE LOOKING AFT



LOUNGE LOOKING FORWARD



DINING ROOM



OWNER'S OFFICE



OWNER'S SUITE



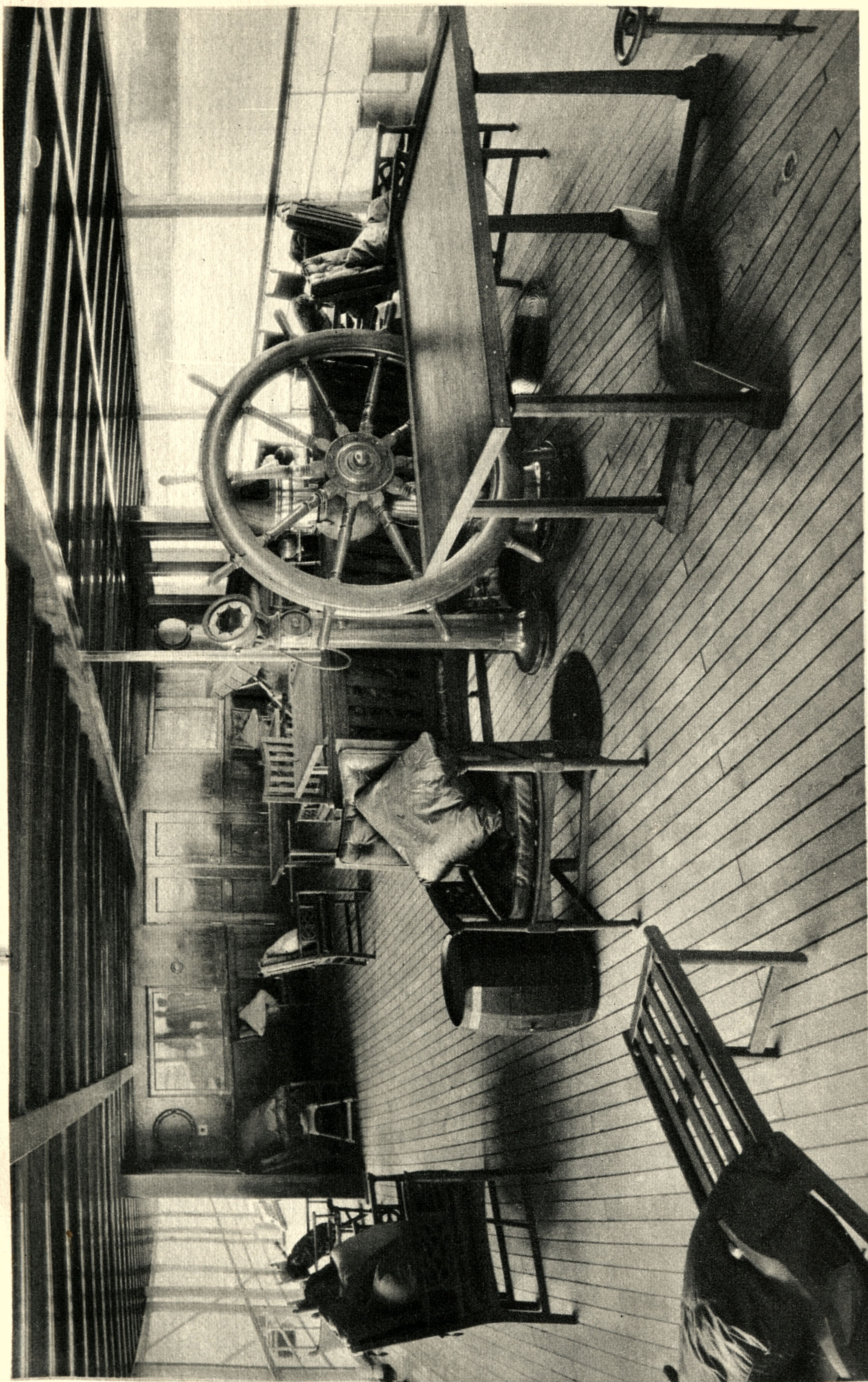
ADJOINING GUEST ROOMS



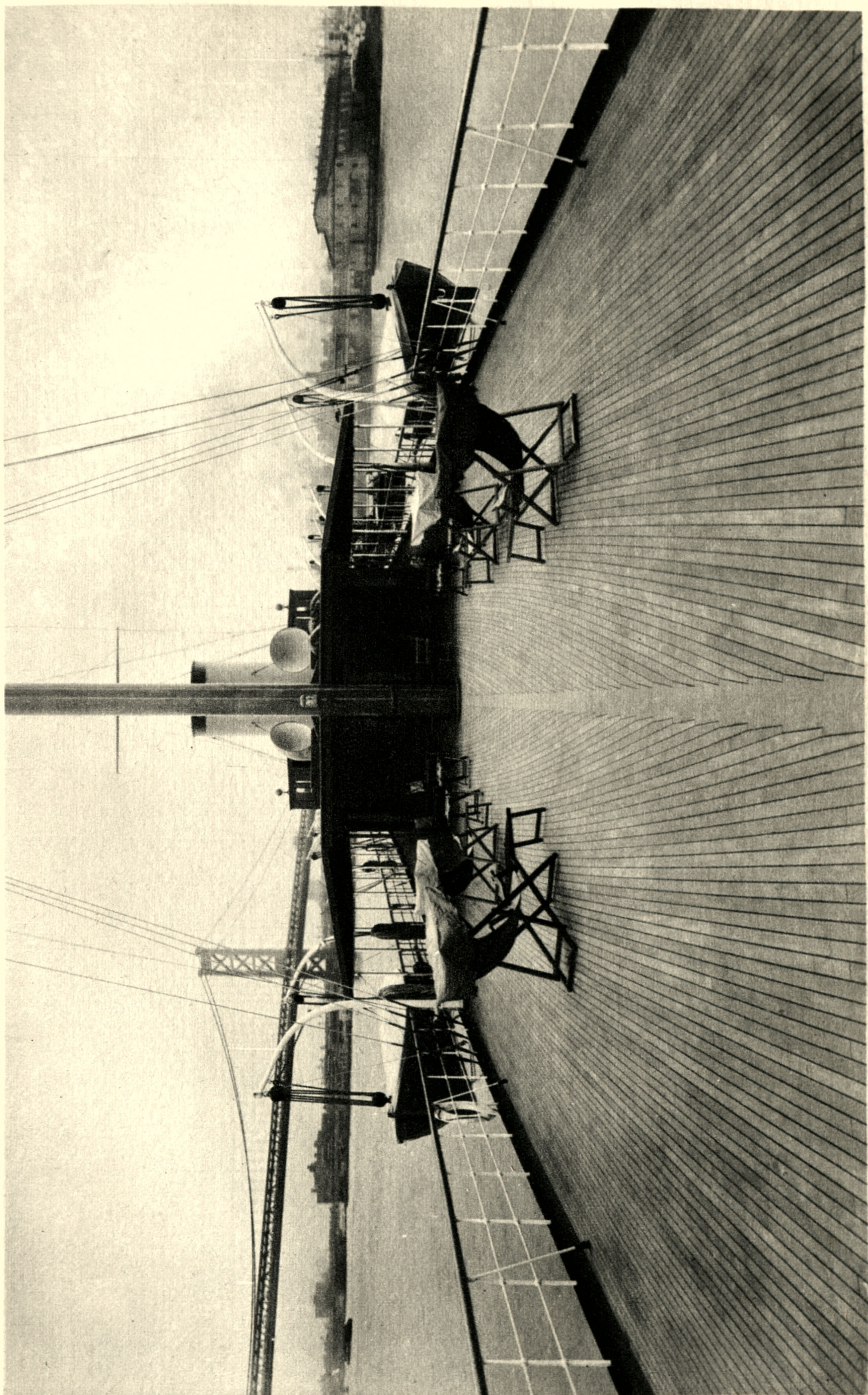
SINGLE GUEST ROOM



CAPTAIN'S ROOM



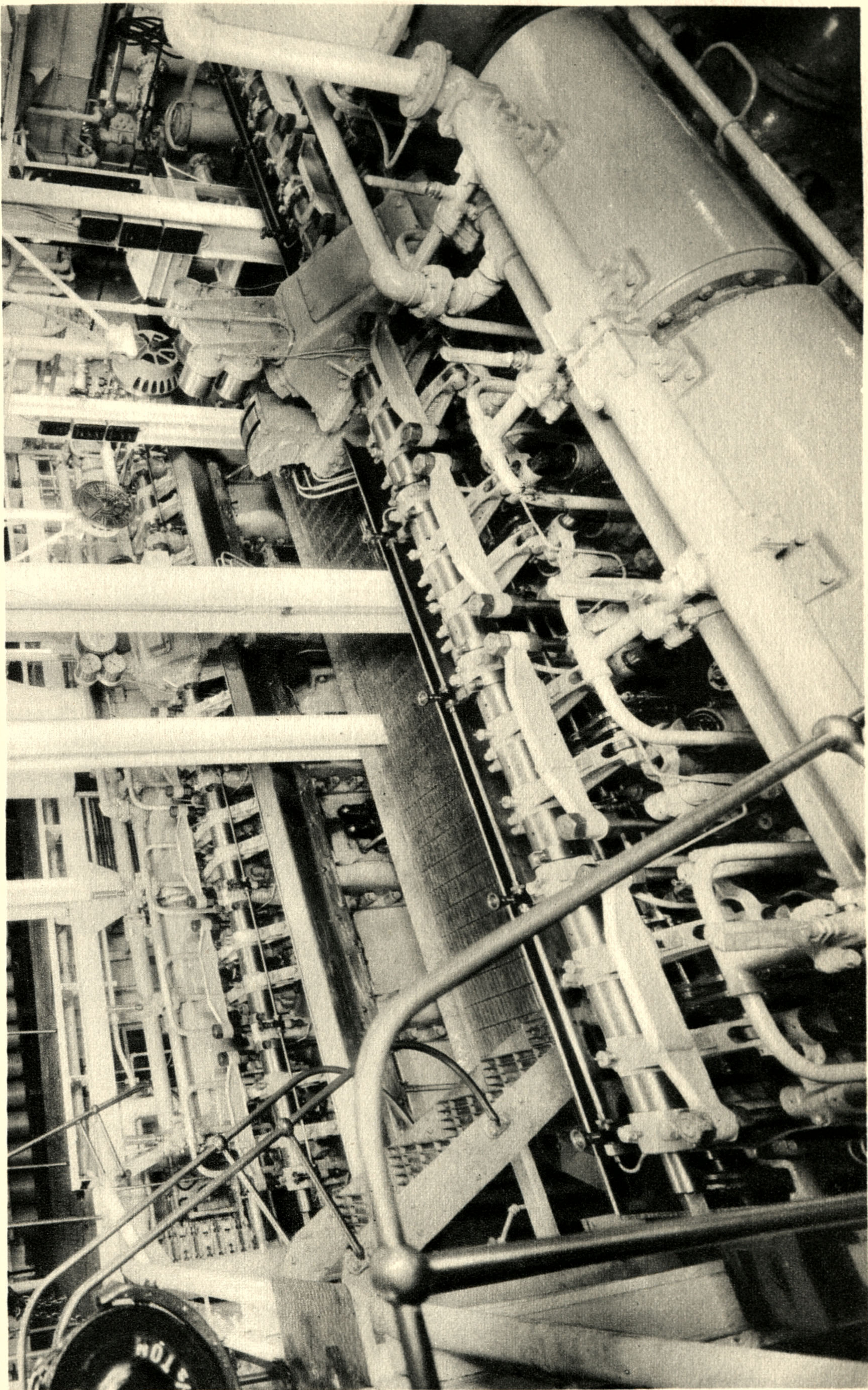
AFTER MAIN DECK



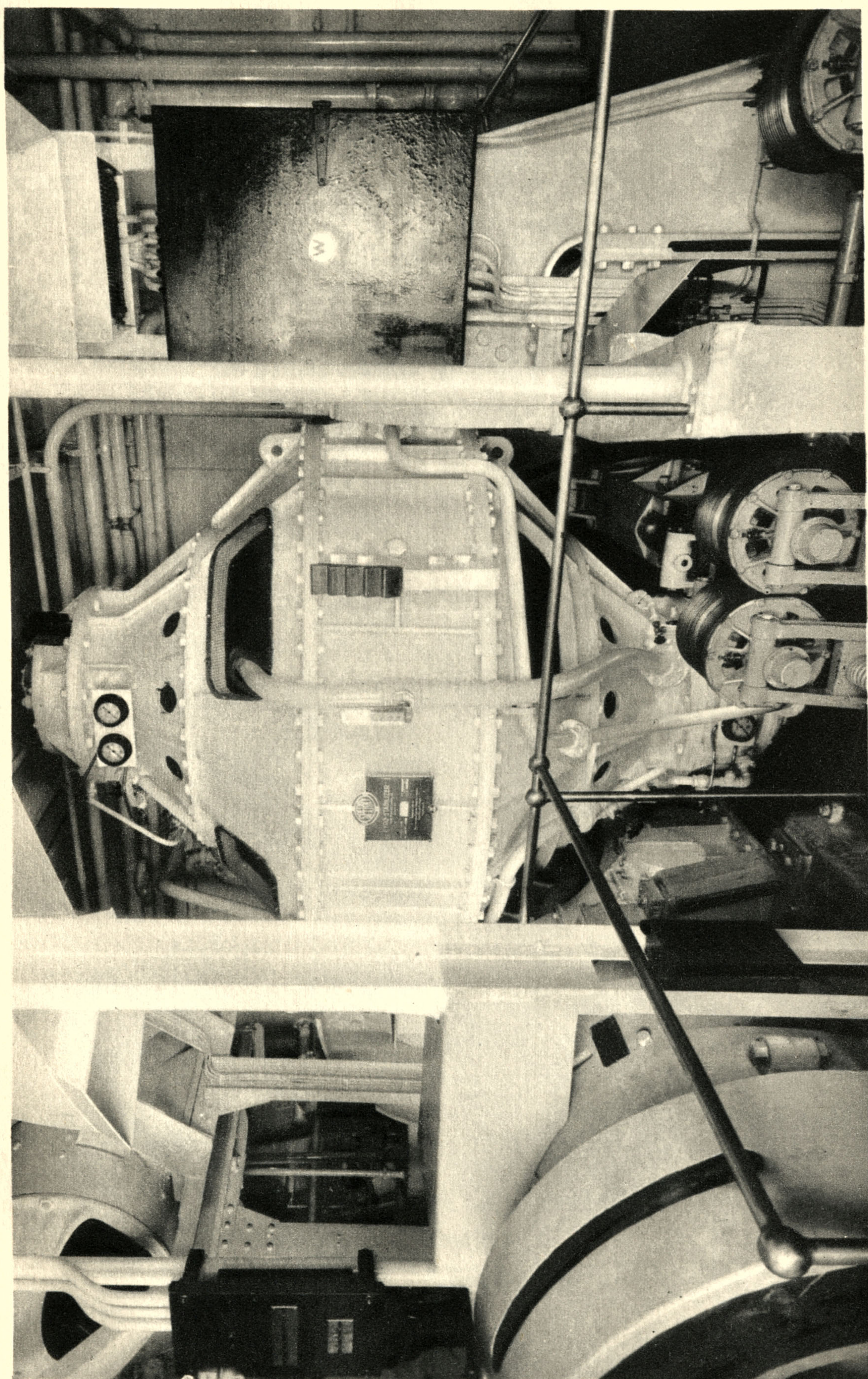
SPORTS DECK AFT



FORWARD MAIN DECK



ENGINE ROOM



GYROSCOPIC STABILIZER

MOTOR YACHT CAROLINE

built in 1931 for

ELDRIDGE R. JOHNSON

by the

BATH IRON WORKS, INC.

to Design by

HENRY J. GIELOW, INC.

Equipped with

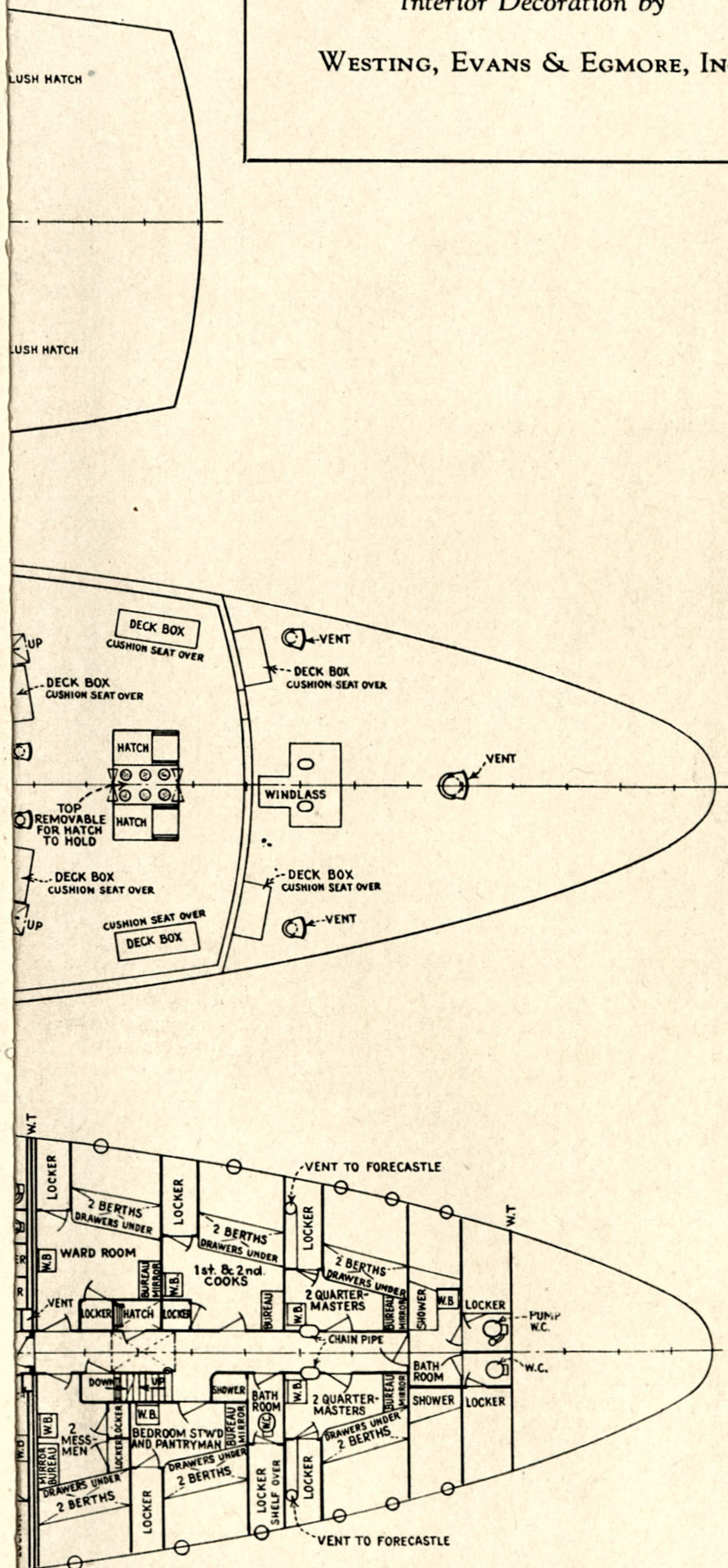
COOPER-BESSEMER DIESELS

and a

SPERRY GYROSCOPIC STABILIZER

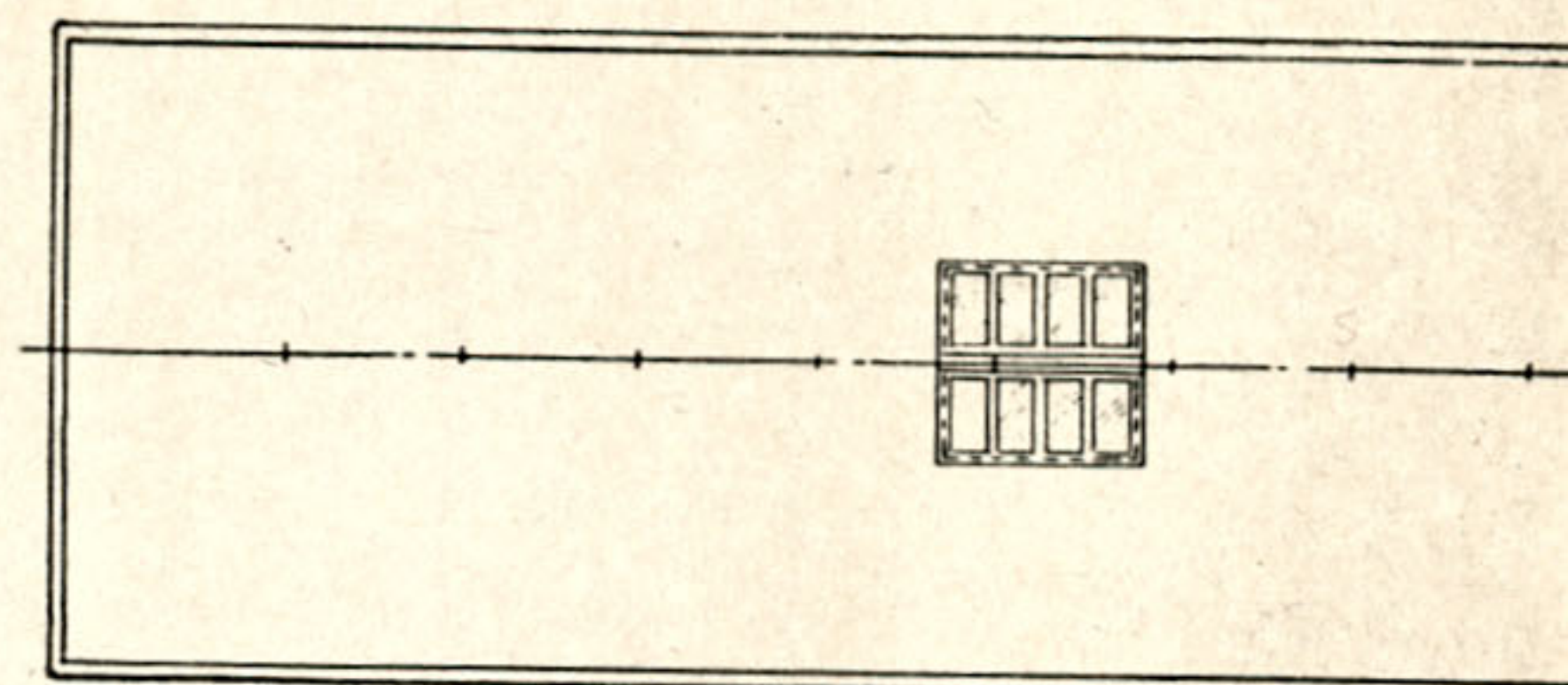
Interior Decoration by

WESTING, EVANS & EGMORE, INC.

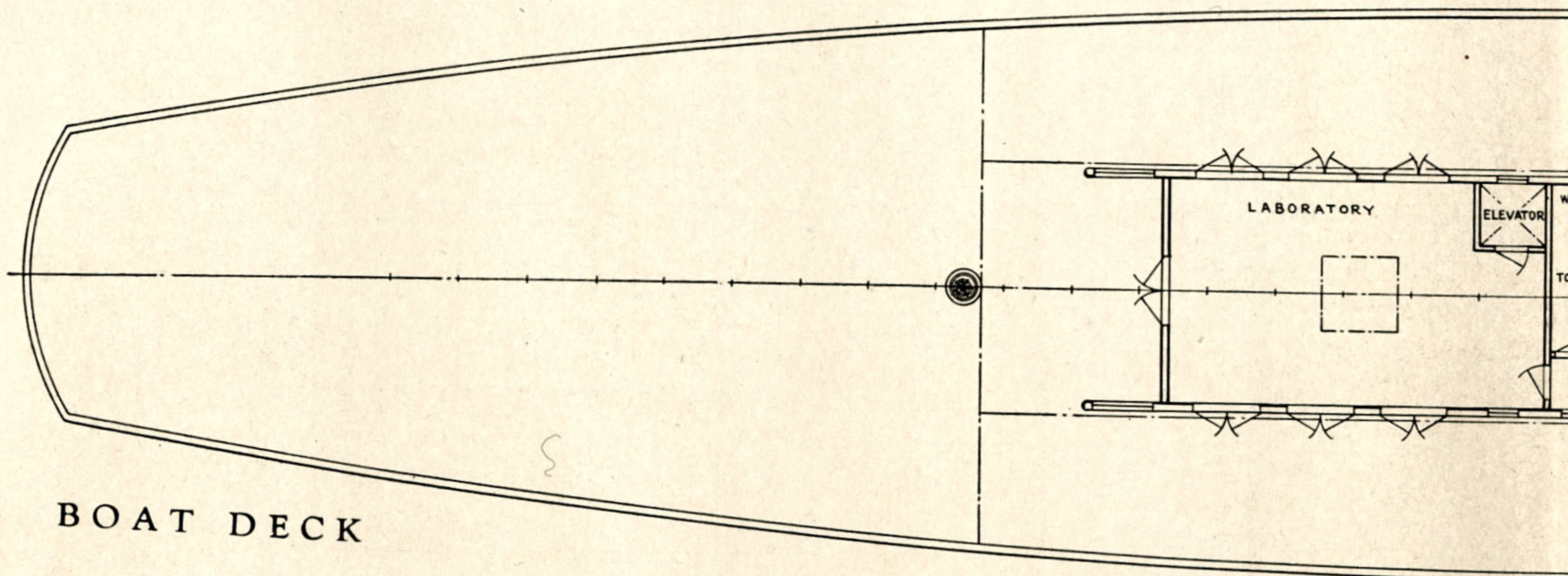


PRINCIPAL CHARACTERISTICS

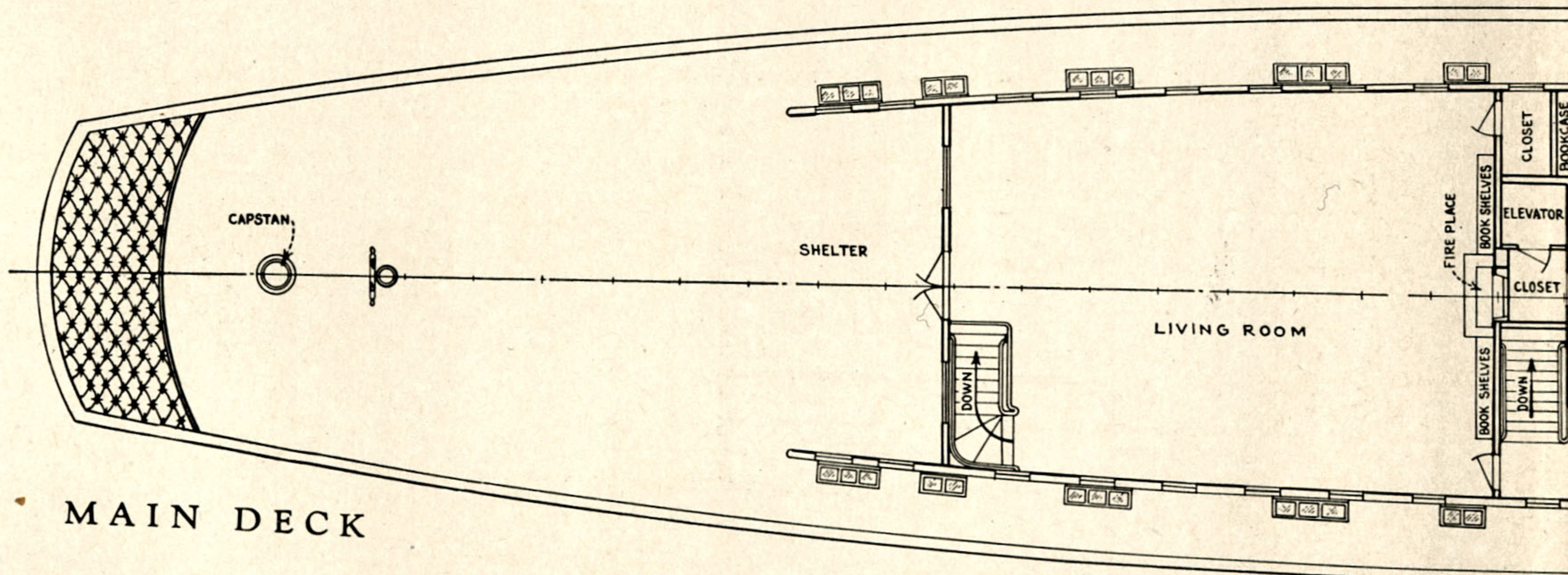
Length over all.....279 feet
 Width.....38 feet
 Depth of hull.....27 feet
 Draft.....17 feet 6 inches
 Power.....3000 horsepower
 Speed per hour.....15.5 sea miles
 Fuel capacity.....365 tons
 Fresh water.....347 tons
 Food stores capacity for...6 months
 Cruising range at 12 knots
 10,000 miles



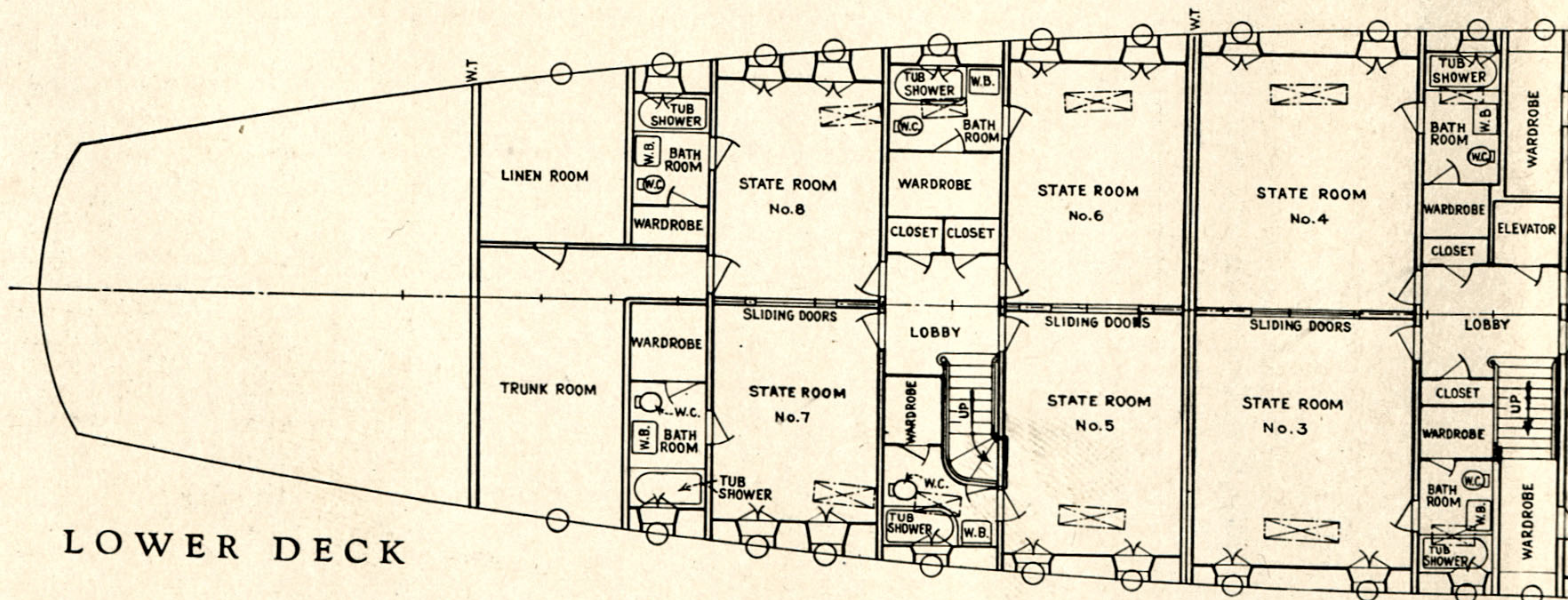
BRIDGE DECK



BOAT DECK

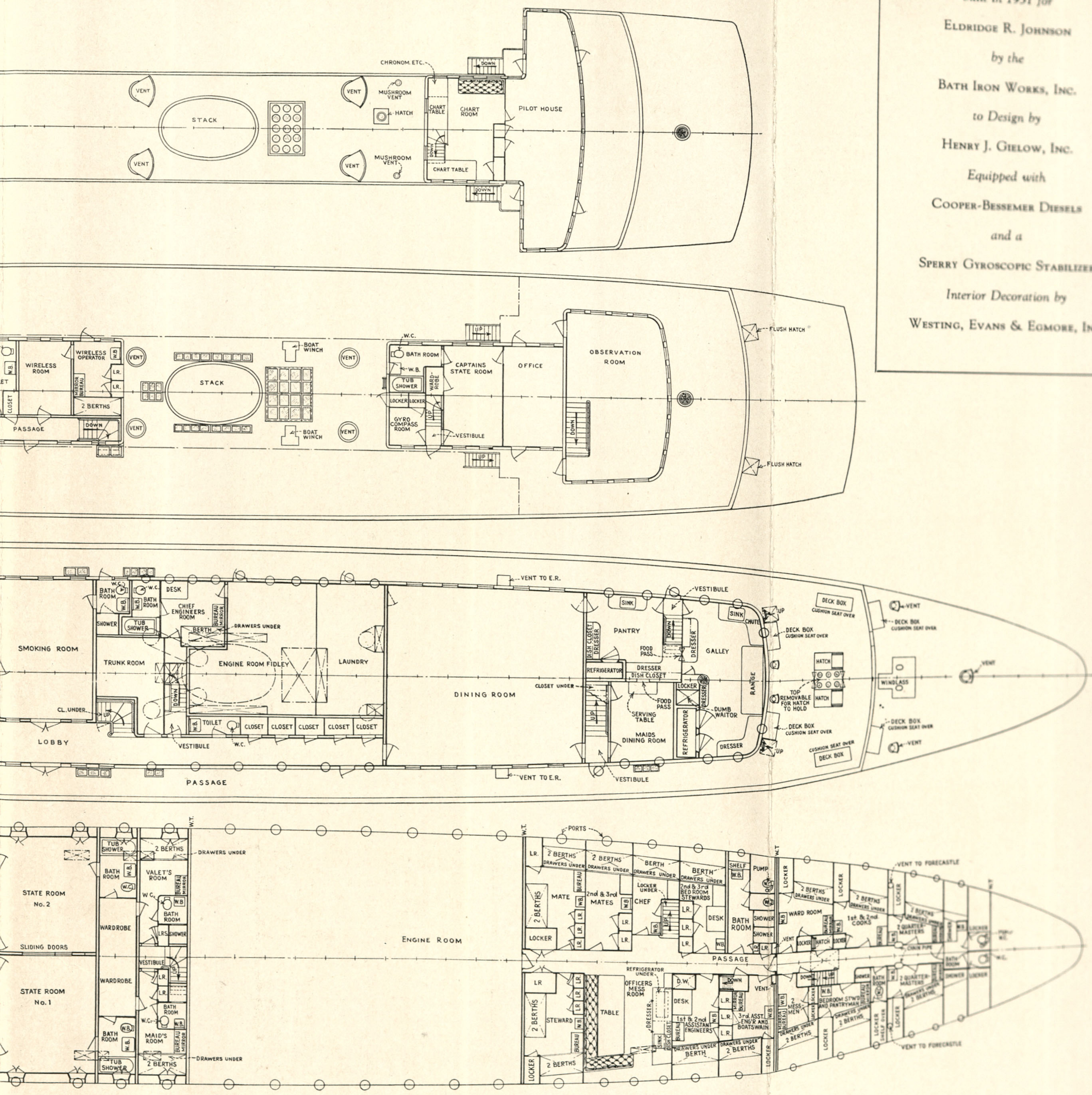


MAIN DECK

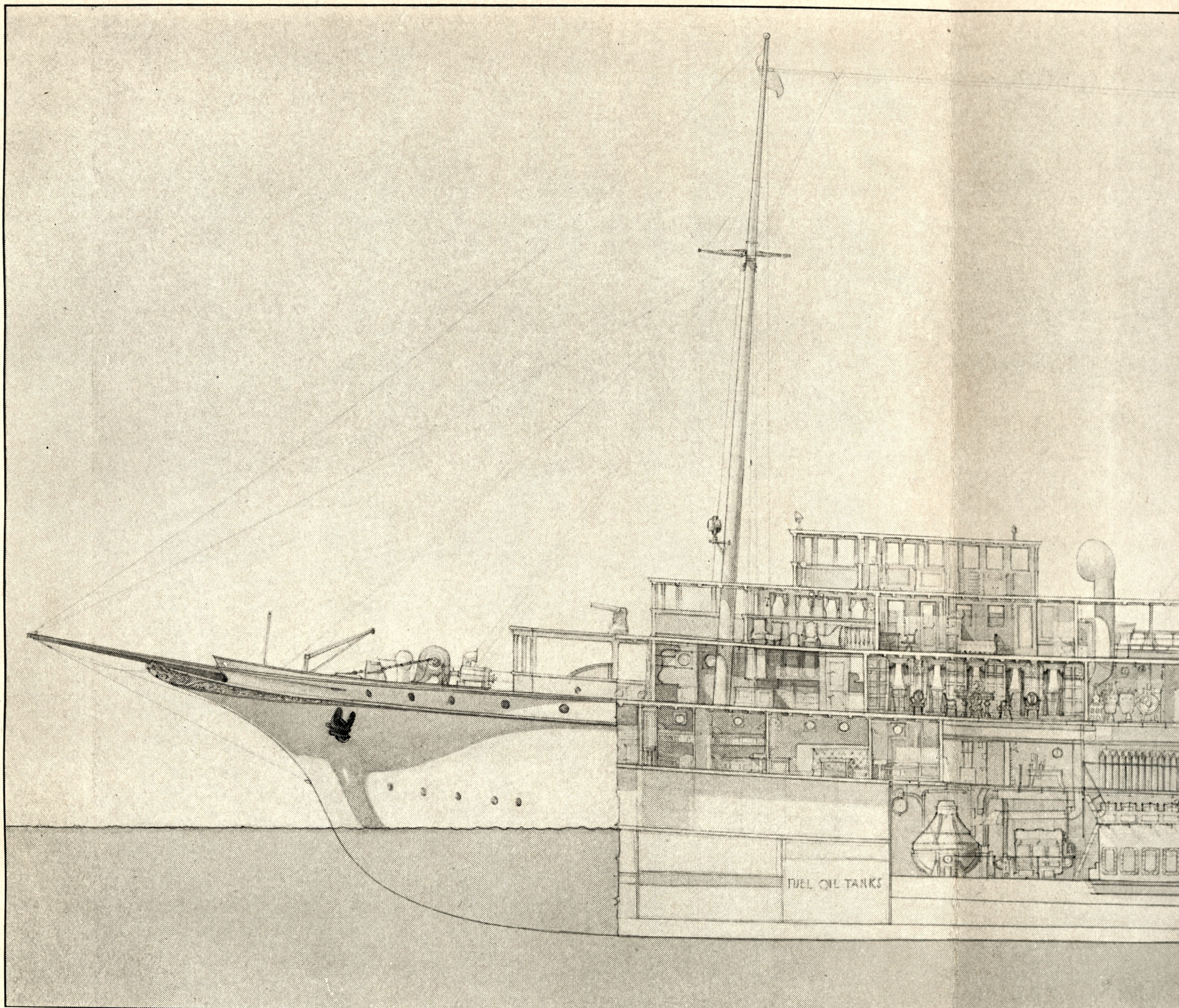


LOWER DECK

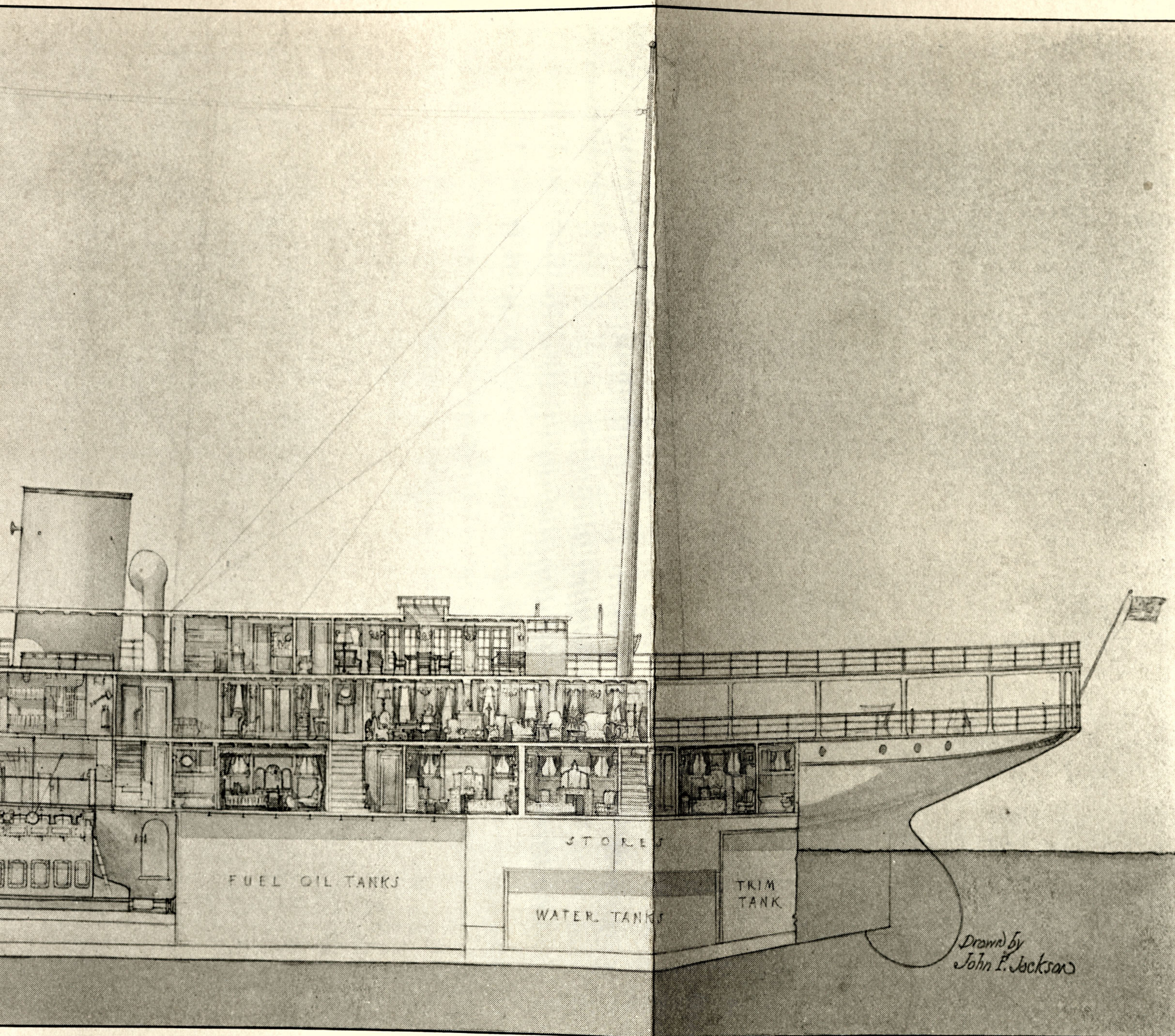
CK PLANS OF THE CAROLINE



MOTOR YACHT CAROLINE
 built in 1931 for
 ELDRIDGE R. JOHNSON
 by the
 BATH IRON WORKS, INC.
 to Design by
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 Equipped with
 COOPER-BESSEMER DIESELS
 and a
 SPERRY GYROSCOPIC STABILIZER
 Interior Decoration by
 WESTING, EVANS & EGMORE, INC.



CUTAWAY DRAWING SHOWING INTERI



IOR ARRANGEMENT OF THE CAROLINE